

Postdural puncture headache in obstetric patients

INTRODUCTION

Headache in the early postpartum period is a common symptom, with up to 39% of women reporting it in the first week after giving birth.¹ Although the majority will have self-limiting aetiologies,² a subset of patients will suffer with a postdural puncture headache (PDPH), a recognised complication of neuraxial anaesthetic techniques, with potentially life-threatening neurological consequences and a profound impact on the postnatal period. The report on Confidential Enquiries into Maternal Deaths (2009–2012) highlights two maternal mortalities that were attributed to a delay in diagnosis of subdural haematoma and cerebral venous sinus thrombosis that were associated with PDPH.³ Subsequent recommendations underscore the need for follow-up of patients with PDPH and communication of events to the GP, who plays a pivotal role in providing care for the mother in the puerperium.³ Current guidance from the Obstetric Anaesthetists' Association and the Association of Anaesthetists of Great Britain and Ireland⁴ recommends the routine follow-up of parturients who have received neuraxial anaesthesia, in order to seek feedback and identify complications. Expedited discharge of the mother or a delayed onset of PDPH in some women may mean, however, that not all cases will be captured prior to hospital discharge, and it may be within the sphere of primary care that these symptoms are first reported. Despite this, previous reports have demonstrated limited knowledge of this condition among GPs,⁵ as well as misdiagnosis of its sequelae.⁶ This article reviews the pathophysiology, clinical picture, and management of PDPH in obstetric patients.

PATHOPHYSIOLOGY AND CLINICAL PRESENTATION

PDPH is described by the International Headache Society as headache that occurs within 5 days of a lumbar puncture, which

is usually associated with neck stiffness and/or subjective auditory symptoms, and that shows spontaneous resolution within 14 days or responds to an autologous blood patch.⁷ It typically exhibits onset within 72 hours of dural puncture either inadvertently during attempted epidural analgesia for labour or deliberately during spinal anaesthesia for operative interventions. It is estimated that PDPH follows ~1% of all neuraxial blocks for labour and delivery.^{2,8} Certain characteristics of parturients, namely sex and young age, may predispose them to the development of PDPH, as may factors such as previous PDPH, bearing down during the second stage of labour, and the neuraxial technique itself.¹

The hypothesised aetiology of the headache is slow cerebrospinal fluid (CSF) leak through the defect in the meninges, causing intracranial hypotension with resultant traction on pain-sensitive structures and reactive venodilatation. The headache is classically bilateral occipito-frontal in location (less commonly in the temporal region or vertex), dull aching or throbbing in character, and of variable severity. A distinctive characteristic of PDPH is its orthostatic nature, with manifestation of symptoms in the upright position and relief on assuming recumbence. The headache may show exacerbation on coughing or straining, and >50% of cases may be associated with additional symptoms such as nausea, photophobia, tinnitus, or vertigo.² It is worth noting, however, that atypical presentations that lack a postural component, that have an immediate or delayed onset or a protracted course, or that present as isolated interscapular or back pain with radiation to the upper limbs, have been reported.⁸

COMPLICATIONS

Subdural haematoma is an uncommon consequence of dural puncture and PDPH that may have a delayed presentation and

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carries a mortality rate of about 13%.² The proposed mechanism is shearing of the subdural veins caused by sagging of the brain secondary to the low CSF pressure. Intracranial hypotension may additionally lead to vascular stasis and cerebral venous thrombosis. Convulsions, cerebral infarction, cranial nerve palsies (most commonly of the sixth nerve, causing diplopia), and chronic headache states have also been described.¹

MANAGEMENT

The management of PDPH should be instituted in liaison with the patient's anaesthetic team. Treatment for mild cases is typically initiated with supportive measures while allowing time for spontaneous healing of the dural perforation. Bed rest may provide symptomatic relief but there is no evidence that it alters the clinical course, and its benefits must be weighed against the heightened risk of venous thromboembolism during puerperium. Although frequently encouraged, the role of increased fluid intake to replenish the lost CSF remains unclear.⁹ Pharmacological treatment includes simple analgesics like paracetamol and non-steroidal anti-inflammatory agents, and antiemetics. Caffeine (given orally or intravenously) promotes cerebral vasoconstriction and was found to reduce the incidence of persistent PDPH and the need for supplementary conservative interventions.¹⁰ Other drugs such as gabapentin, hydrocortisone, and theophylline may reduce pain severity scores, but evidence for their role in the treatment of PDPH has yet to be established.¹⁰

Patients with moderate to severe PDPH may require further anaesthetic intervention, namely an epidural blood patch, which is the mainstay of treatment of PDPH and involves the aseptic collection and injection of autologous blood into the epidural space. The blood clot creates a seal to the dural puncture, thus arresting the CSF leak. The procedure has an initial success rate of up to 70%¹ but may need to be performed more than once to produce relief from the headache. Transient post-procedural back pain is reported by some patients. An epidural blood patch also carries the same risks of epidural catheter insertion, including that of infection or causing another dural puncture.

WHEN TO REFER

Both clinicians and patients should remain vigilant for 'red flag' features that may indicate more sinister conditions

Box 1. Differential diagnosis of postdural puncture headache

- Migraine
- Tension headache
- Hypertensive disease of pregnancy
- Dural sinus thrombosis
- Ischaemic/hemorrhagic stroke
- Meningitis
- Intracranial tumour
- Posterior reversible leukoencephalopathy syndrome
- Other, for example, musculoskeletal/non-specific headache/drug related

and that should trigger emergency neurology referral and/or neuroimaging. These include: loss of the postural element, unilaterality, altered sensorium, uncontrollable vomiting, signs of infection, the development of convulsions, focal neurological features, or the persistence, progression, or recurrence of symptoms. It is important to remember that dual pathology may exist, and that the clinical picture of evolving cerebrovascular stroke may overlap with that of PDPH, making a high index of suspicion essential when assessing these patients (Box 1).

SUMMARY

PDPH is a common complication of neuraxial anaesthesia that GPs may encounter while providing postnatal care for women in the community. Although frequently of benign course, PDPH may be associated with significant morbidity and even mortality. Familiarity with the nature of the condition, close follow-up, and interdisciplinary communication are crucial for timely diagnosis and management.

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